

CLAIMS

WHAT IS CLAIMED IS:

1. A turbine fluid guide member comprising:
an airfoil portion;
5 a platform portion;
a fillet joining the airfoil portion to the platform portion; and
a coolant outlet positioned remotely from the fillet such that a cooling flow exiting
the outlet is directed by a vortex flow to form a cooling film over the fillet.
- 10 2. The turbine fluid guide member of claim 1, wherein the coolant outlet
comprises a hole positioned in the airfoil portion proximate the fillet.
3. The turbine fluid guide member of claim 1, wherein the coolant outlet
comprises a hole positioned in the platform portion proximate the fillet.
- 15 4. The turbine fluid guide member of claim 1, wherein the airfoil portion
comprises a stationary vane.
5. The turbine fluid guide member of claim 1, wherein the airfoil portion
20 comprises a rotating blade.
6. The turbine fluid guide member of claim 1, further comprising a plurality of
spaced apart coolant outlets disposed longitudinally so that the cooling film is
maintained below a predetermined temperature along a length of the fillet.
- 25 7. A turbine fluid guide member comprising:
an airfoil having pressure and suction sides;
a platform;
a fillet joining the airfoil to the platform;
30 a plurality of holes formed in the airfoil directing a coolant flow into a first vortex
flow to create a first cooling film along a first portion of the fillet on a first one of the
pressure and vortex sides.

8. The turbine guide member of claim 7, further comprising a plurality of holes formed in the platform directing the coolant flow into a second vortex flow to create a second cooling film along a second portion of the fillet on a second one of the pressure and suction sides.

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9. A combustion turbine engine comprising:
a compressor;
a turbine;
a combustor; and

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a turbine fluid guide member comprising an airfoil portion, a platform portion, a fillet joining the airfoil portion to the platform portion, and a coolant outlet positioned remote from the fillet such that a cooling flow exiting the outlet is directed by a vortex flow to form a cooling film over the fillet.

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10. A method for cooling a portion of a turbine fluid guide member comprising:
identifying a vortex flow around the turbine fluid guide member; and
selectively positioning a coolant outlet relative to the vortex flow such that a cooling flow exiting the outlet is directed by the vortex flow to form a cooling film over a fillet portion of the turbine fluid guide member.